

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

priority Application Serial No. 09/488,973
priority Filing Date January 20, 2000
Inventor..... Parfeniuk et al.
Assignee..... Honeywell International Inc.
priority Group Art Unit 2823
priority Examiner D. Collins
Attorney's Docket No. HO57-235
Title: Physical Vapor Deposition Target Constructions

PRELIMINARY AMENDMENT

To: Box Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

From: David G. Latwesen, Ph.D. (Tel. 509-624-4276; Fax 509-838-3424)
Wells, St. John, Roberts, Gregory & Matkin P.S.
601 W. First Avenue, Suite 1300
Spokane, WA 99201-3828

AMENDMENTS

In The Specification.

Replace the title with -- Physical Vapor Deposition Target Constructions--.

At page 1, before the "Technical Field" section, insert,

--Related Patent Data

This patent resulted from a divisional application of U.S. Patent Application
Serial No. 09/488,973, which was filed on January 20, 2000.--.

Replace the paragraph at page 13, lines 12-23 with the following:

-- In addition to the strong bond formed between target 50 and backing plate 60 of assembly 70, a grain size of target 50 is preferably below 100 microns, more preferably from about 30 to less than 100 microns, and more preferably below about 50 microns after the diffusion bonding. Specifically, a predominate portion (i.e., more than 50%) of the grains in target 50 will preferably have a maximum dimension of less than 100 microns, more preferably from about 30 microns to less than 100 microns, and more preferably less than about 50 microns. In particular embodiments, an entirety of the grains in target 50 have a maximum dimension of less than 100 microns, more preferably from about 30 microns to less than 100 microns, and more preferably less than about 50 microns. --

In The Claims.

Cancel claims 1-37.

Add the following new claims.

38. A physical vapor deposition target construction comprising:
a physical vapor deposition target consisting essentially of high purity aluminum
material and diffusion bonded to an aluminum-containing backing plate; and
wherein a predominate portion of the grains in the target material are less than 100
microns in maximum dimension.

39. The physical vapor deposition target construction of claim 38 wherein all of
the grains in the target material have the maximum dimension of the less than 100
microns.

40. The physical vapor deposition target construction of claim 38 wherein the
maximum dimension of the predominate portion of the grains in the target material is less
than or equal to about 50 microns.

41. The physical vapor deposition target construction of claim 38 wherein the
maximum dimension of all of the grains in the target material is less than or equal to about
50 microns.

42. The physical vapor deposition target construction of claim 38 wherein the maximum dimension of the predominate portion of the grains in the target material is from about 30 microns to less than 100 microns.

43. The physical vapor deposition target construction of claim 38 wherein the maximum dimension of all of the grains in the target material is from about 30 microns to less than 100 microns.

44. The physical vapor deposition target construction of claim 38 wherein the diffusion bond between the target and the backing plate has a bond strength of at least about 5000 psi.

45. The physical vapor deposition target construction of claim 44 wherein all of the grains in the target material have the maximum dimension of the less than 100 microns.

46. The physical vapor deposition target construction of claim 44 wherein the maximum dimension of the predominate portion of the grains in the target material is less than or equal to about 50 microns.

47. The physical vapor deposition target construction of claim 44 wherein the maximum dimension of all of the grains in the target material is less than or equal to about 50 microns.

48. The physical vapor deposition target construction of claim 44 wherein the maximum dimension of the predominate portion of the grains in the target material is from about 30 microns to less than 100 microns.

49. The physical vapor deposition target construction of claim 44 wherein the maximum dimension of all of the grains in the target material is from about 30 microns to less than 100 microns.

50. The physical vapor deposition target construction of claim 38 wherein the diffusion bond between the target and the backing plate has a bond strength of from about 8000 psi to about 10,000 psi.

51. The physical vapor deposition target construction of claim 38 wherein the backing plate comprises a material selected from the group consisting of 2000 Series aluminum, 5000 Series aluminum, 6000 Series aluminum, and 7000 Series aluminum.

52. The physical vapor deposition target construction of claim 38 wherein the backing plate comprises 6061 aluminum alloy.

REMARKS

Claims 1-37 are canceled, and new claims 38-52 are added and pending in the application. New claims 38-52 are supported by the originally-filed application at the following exemplary locations.

Claim 38 is supported by the originally-filed application at, for example, Fig. 5 (illustrating a target 50 diffusion bonded to backing plate 60), page 7, lines 7 and 8 (indicating that the target 50 could comprise or consist essentially of high purity aluminum), page 8, line 4 (indicating that the backing plate 60 can comprise aluminum), and page 13, lines 16-18 (indicating that a predominate portion of the grains in target 50 can have a maximum dimension of less than 100 microns).

Claim 39 is supported by, for example, page 13, lines 20 and 21 (indicating that an entirety of the grains in target 50 can have a maximum dimension of less than 100 microns).

Claim 40 is supported at, for example, page 13, lines 16-19 (indicating that the predominate portion of the grains in target 50 can have a maximum dimension of less than about 50 microns).

Claim 41 is supported at, for example, page 13, lines 19-23 (indicating that an entirety of the grains in target 50 can have a maximum dimension of less than about 50 microns).

Claim 42 is supported at, for example, page 13, lines 16-19 (indicating that a predominate portion of the grains in target 50 will preferably have a maximum dimension of from about 30 microns to less than 100 microns).

Claim 43 is supported by the originally-filed application at, for example, page 13, lines 19-23 (indicating that an entirety of the grains in target 50 can have a maximum dimension of from about 30 microns to less than 100 microns).

Claim 44 is supported at, for example, page 12, lines 11-14 (indicating that a diffusion bond between target 50 and backing plate 60 can have a strength of at least 5,000 psi).

Claims 45-49 are supported at, for example, page 13, lines 12-23 as discussed above regarding claims 39-43, respectively.

Claim 50 is supported at, for example, page 12, line 14 (wherein it is indicated that a diffusion bond strength between target 50 and backing plate 60 can be between 8,000 psi and 10,000 psi).

Claim 51 is supported at, for example, page 8, lines 3-5 (wherein it is stated that the backing plate can comprise 2000 Series, 5,000 Series, 6000 Series or 7000 Series aluminum alloys).

Claim 52 is supported at page 8, lines 6-8 (wherein it is stated that the backing plate can comprise 6061 aluminum alloy).

The specification is amended to correct a minor typographical error in the paragraph at page 13, lines 12-23.

Applicant requests examination of claims 38-52.

Respectfully submitted,

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By: 
David G. Latwesen, Ph.D.
Reg. No. 38,533

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VERSION WITH MARKINGS TO SHOW CHANGES MADE IN ACCOMPANYING
PRELIMINARY AMENDMENT

In the Specification

The replacement specification paragraphs incorporate the following amendments.

Underlines indicate insertions and ~~strikeouts~~ indicate deletions.

The paragraph beginning at lines 12-23 on page 13 has been amended as follows:

In addition to the strong bond formed between target 50 and backing plate 60 of assembly 70, a grain size of target 50 is preferably below 100 microns, more preferably from about 30 to less than 100 microns, and more preferably below about 50 microns after the diffusion bonding. Specifically, a predominate portion (i.e., more than 50%) of the grains in target 50 will preferably have a maximum dimension of less than 100 microns, more preferably from about 30 microns to less than 100 microns, and more preferably less than about 50 microns. In particular embodiments, an entirety of the grains in target 50 have a maximum dimension of less than 100 microns, more preferably from about 30 microns to less than 100 microns, and more preferably less than about 50 microns.

In the Claims

Claims 1-37 are cancelled and new claims 38-52 are added.